Purpose:

To establish a web-based software system, an electronic patient record (ePR), to consolidate and evaluate clinical data, dose delivery and treatment outcomes for non small cell lung cancer (NSCLC) patients treated with hypofractionated stereotactic ablative radiation therapy (SABR) across institutions.

Methods:

The new trend of information technology in medical imaging and informatics is towards the development of an electronic patient record (ePR), in which all health and medical information of each patient are organized under the patient’s name and identification number. The system has been developed using the Wamp Server, a package of Apache web server, PHP and MySQL database to facilitate patient data input and management, and evaluation of patient clinical data and dose delivery across institution using web technology. The data of each patient to be recorded in the database include pre-treatment clinical data, treatment plan in DICOM-RT format and follow-up data. The pre-treatment data include demographics data, pathology condition, cancer staging. The follow-up data include the survival status, local tumor control condition and toxicity. The clinical data are entered to the system through the web page while the treatment plan data will be imported from the treatment planning system (TPS) using DICOM communication.

Results:

The collection of data of NSCLC patients treated with SABR stored in the ePR is always accessible and can be retrieved and processed in the future. The core of the ePR is the database which integrates all patient data in one location.

Conclusions:

The web-based DICOM RT ePR system utilizes the current state-of-the-art medical informatics approach to investigate the combination and consolidation of patient data and outcome results. This will allow clinically-driven data mining for dose distributions and resulting treatment outcome in connection with biological modeling of the treatment parameters to quantify the efficacy of SABR in treating NSCLC patients.